



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/600,694	07/21/2000	JOHANN MICHAEL KOHLER	F-6579	1463

7590 05/06/2004

JORDAN AND HAMBURG
122 EAST 42ND STREET
NEW YORK, NY 10168

EXAMINER

DOROSHENK, ALEXA A

ART UNIT PAPER NUMBER

1764

DATE MAILED: 05/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/600,694

Applicant(s)

KOHLER ET AL.

Examiner

Alexa A. Doroshenk

Art Unit

1764

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 September 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☒ Claim(s) 1 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 July 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 7-21-00 & 9/22/00.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The "DNA Amplification with a Microfabricated Reaction Chamber" reference of the information disclosure statement filed July 21, 2000 fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because no date of publication has been provided for this reference. It has been placed in the application file, but the information referred to therein has not been considered as to the merits. Applicant is advised that the date of any re-submission of any item of information contained in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609 ¶ C(1).

Claim Objections

2. Claim 1 is objected to because it includes reference characters which are not enclosed within parentheses.

Reference characters corresponding to elements recited in the detailed description of the drawings and used in conjunction with the recitation of the same element or group of elements in the claims should be enclosed within parentheses so as to avoid confusion with other numbers or characters which may appear in the claims. See MPEP § 608.01(m).

See Claim 1, line 23 "third substrate chip C".

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The language of the claims is so unclear as to not distinctly or clearly claim the subject matter of the invention. Examples of such claim language with respect to claim 1 follow:

The term "a thermal conductivity as high as possible " in claim 1 is a relative term which renders the claim indefinite. The term "a thermal conductivity as high as possible " is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

The phrase "whereby the substrate chips on one of their faces are, at least on those ranges being provided with channels, entirely and level captured by a heating means" is unclear. What ranges? Are these channels the same microstructurized channels as recited above or new channels? What does "entirely and level captured" mean?

Claim 1 recites the limitation "that surface" in line 24. There is insufficient antecedent basis for this limitation in the claim.

Art Unit: 1764

The term "poor thermal conductivity" in claim 1 is a relative term which renders the claim indefinite. The term "poor thermal conductivity" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claim 1 recites the limitation "the latter" in line 2 of page 14. There is insufficient antecedent basis for this limitation in the claim. The latter what? Substrate chip?

What is intended by the term openings "captured by" openings?

For examination purposes in order to examine the claims on their merits, the claims have been interpreted as they best read on figure 1 of the specification.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

Art Unit: 1764

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ashmead et al. (5,534,328) in view of Stephenson et al. (5,875,385), Peterson (4,532,028) or Cornils et al. (4,523,036).

With respect to claims 1, 2, 6 and 8, Ashmead et al. discloses a miniaturized chemical processing apparatus which is a substrate made up of a plurality of laminae (reads on substrate chips). Among these laminae, Ashmead et al. discloses wound flow path (fig. 11 and 15) and flow paths made up of subdivided paths (fig. 8, 9, 12, 16, 17); heat exchanger lamina (fig. 6, 10, 13, 14); thermal barrier lamina (fig. 9, 12); and inlets and outlets on each lamina so as to be aligned with their respective outlets and inlets in an adjacent lamina (col. 8, lines 41-54).

Ashmead et al. further discloses:

"It is characteristic of the apparatus of this invention that it can readily be adapted to effect all or nearly all chemical reactions that one may conceive. Depending on the physical and chemical properties of the individual chemicals being processed, or the two or more chemicals being reacted, one skilled in the art can design an apparatus having the requisite size, shape and throughput of tortuous channel and the number, and geometry, of the various laminae. The type and location of unit operation means can be adapted to the designed apparatus and integrated therewith. Finally, if desired, an array of apparatuses can be joined in sequential and/or tandem operation. Because of the materials of construction, convenient size and adaptability of the integrated structure of this invention, one may begin pilot plant or commercial operation of a target process more quickly, with greater flexibility, fewer start-up difficulties and utilizing low capital overhead investment than heretofore. This is all possible because of the special adaptability of the structures and design parameters to effect nearly any chemical process."

It is held by this statement of Ashmead et al., that one having ordinary skill in the art could conceive of any of a variety of micro-reactor configurations, including that of the instant application, for any known chemical process in order to have improved precision of control, enhanced safety and reduced capital investment (col. 1, lines 9-14).

Stephenson et al. (fig. 1, col. 4, lines 4-9 and col. 6, lines 40-46), Peterson (fig. 1 and col. 6, line 61- col. 7, line 6) and Cornils et al. (fig. 1 and col. 3, line 58- col. 4, line 34) all disclose systems wherein reactant feeds are pre-heated and then fed to a reactor where they mix and then are cooled. Such reaction systems read on the reaction processes of the instant invention. It would have been obvious to one of ordinary skill in the art at the time the invention was made to select any of these apparatuses for conversion into a micro-reactor as taught by Ashmead et al.

With respect to claim 7, no structure is claimed and therefore continues to read on Ashmead et al. The material or article worked upon does not limit apparatus claims. MPEP 2115.

With respect to claims 3 and 4, Ashmead et al. further discloses, when the device is used during a bioreaction, a polymer to be used on the laminae (col. 3, lines 14-18).

With respect to claim 5, Ashmead et al. further discloses wherein a lamina can be made of glass (col. 3, lines 12-14).

Conclusion

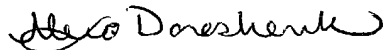
8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexa A. Doroshenk whose telephone number is 571-

Art Unit: 1764

272-1446. The examiner can normally be reached on Monday - Thursday from 9:00 AM - 7:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Alexa Doroshenk
Patent Examiner
Art Unit 1764

April 29, 2004